

App. No. 10/008,413
Office Action Dated April 29, 2005

REMARKS

Favorable reconsideration is requested in view of the above amendments and the following remarks. Claim 26 is amended and is supported, for instance at page 3, lines 29-35 in Applicants' disclosure. No new matter has been added. Claims 26-33 are pending.

Claims 26-33 are rejected under 35 U.S.C. 112, first paragraph, for lacking enablement. Applicants respectfully traverse this rejection.

The rejection states that the specification is enabling for two cobalt compounds, namely a hardly soluble cobalt compound and an easily soluble cobalt compound, however, it is not enabling for these compounds both being cobalt hydroxide. Applicants respectfully disagree.

Claim 26 recites an active material paste including cobalt compounds comprising a hardly-soluble cobalt compound and an easily-soluble cobalt compound. A cobalt compound according to the present invention may be produced, for example, according to any one of a first, second, and third embodiment. (Page 2, lines 21-35.) Such embodiments involve treating a cobalt hydroxide powder (1) with a sodium hydroxide powder and heat, (2) with a hydroxide aqueous solution and an aqueous solution having an oxidizing agent, and (3) by baking the cobalt hydroxide in an oxygen atmosphere. Such a cobalt compound as produced includes the hardly-soluble properties required by the present invention. In fact, such cobalt compound provides for cobalt hydroxide to be used as a starting material, where cobalt hydroxide, after being subjected for instance to any of the above treatments, results in a cobalt compound that is different from the starting material. (Page 7, lines 1-12 and lines 29-33.)

The active material paste includes another additive being a cobalt compound having a higher solubility, namely the easily-soluble cobalt compound. This compound may be a cobalt metal, cobalt hydroxide, cobalt monoxide, and cobalt sulfate, where such cobalt compound may be provided without the treatment of the former cobalt compound discussed above. Thus, Applicants respectfully submit that, for example, the cobalt compounds of the active material paste may include one cobalt compound being a treated cobalt hydroxide and a second cobalt compound being any of a cobalt metal, cobalt hydroxide, cobalt monoxide, and cobalt sulfate. Accordingly, Applicants respectfully submit that the specification is enabling for both cobalt compounds recited in claim 26.

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Favorable reconsideration and withdrawal of the rejection are respectfully requested.

Claims 26-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite. Applicants traverse this rejection.

As noted above, claim 26 recites an active material paste including cobalt compounds comprising a hardly-soluble cobalt compound and an easily-soluble cobalt compound. For the same reasons discussed above, Applicants respectfully submit that claim 26 is definite for an active material having a hardly-soluble cobalt compound and an easily-soluble cobalt compound. In summary, Applicants disclose, on the one hand, a hardly-soluble cobalt compound according to the present invention, where a cobalt hydroxide is used as a starting material. The cobalt hydroxide, after being subjected for instance to any of the above treatments, results in a cobalt compound that is different from the starting material. (Page 7, lines 1-12 and lines 29-33.) On the other hand, the active material paste includes another additive being the easily soluble cobalt compound. This compound may be a cobalt metal, cobalt hydroxide, cobalt monoxide, and cobalt sulfate, where such cobalt compound is not subjected to treatment as the former cobalt compound. Thus, Applicants respectfully submit that claims 26-33 are definite.

Favorable reconsideration and withdrawal of the rejection are respectfully requested.

Claims 26-33 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as being obvious over Uramoto et al. (JP 61-183868). Applicants respectfully traverse this rejection.

Claim 26 is directed to an alkaline storage battery including a positive electrode plate. Claim 26 recites that the positive electrode plate includes an active material paste containing a nickel hydroxide powder and cobalt compounds defined as a hardly-soluble cobalt compound and an easily-soluble cobalt compound. That is, the claimed invention provides an active material of nickel hydroxide and the cobalt compounds. (Page 7, lines 1-12 and lines 29-33.)

The claimed invention provides advantages such that a positive electrode may be produced by using an active material paste obtained by mixing the foregoing hardly-soluble cobalt compound with an easily-soluble cobalt compound. In an alkaline storage battery as the claimed invention, the hardly-soluble forms a tight network, while the easily-soluble compound forms a fine network. Such a configuration provides a conductive network with higher density in the positive electrode plate, thereby providing an advantageous effect of enabling a high power output. Furthermore, the use of the hardly-soluble cobalt compound, as produced, allows a

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network to be formed substantially exclusively inside the electrode plate, thereby providing an advantageous effect of suppressing micro-short circuits. (Page 8, line 34 to page 9, line 20.)

Uramoto et al. does not disclose or suggest the features of claim 26. Uramoto et al. uses, as its active material, a powder in a eutectic state that is composed of nickel hydroxide, cobalt hydroxide, and cadmium hydroxide. (Abstract.) That is, the active material used defines a material with the lowest melting point possible, making it easily melted. The cited reference, however, does not disclose or suggest a hardly-soluble cobalt compound as required by the claimed invention. The hardly-soluble cobalt compound of the claimed invention is different from any component employed in the active material in Uramoto et al.

For example, the hardly-soluble cobalt compound of the present invention is obtained by using cobalt hydroxide as a starting material, however, the cobalt hydroxide is treated to obtain an end cobalt compound different from the starting material. This is demonstrated by the X-ray diffraction analysis charts for the hardly-soluble cobalt compound, such as produced by any of the three embodiments disclosed. (Figures 1 and 2. and Examples) For the Examiner's convenience an X-ray diffraction analysis chart of cobalt hydroxide as the starting material is attached herewith to further point out the differences. For instance, the diffraction angle 2θ of compounds 1 to 3 in Applicants' disclosure did not have diffraction peaks in the vicinities of 32° and 58° that are shown in the X-ray diffraction analysis of cobalt hydroxide powder. For at least this reason, the hardly-soluble cobalt compound of the claimed invention is different from cobalt hydroxide.

Furthermore, as shown in the Examples, compounds 1 to 3 had significantly small solubility and the produced powders exhibited color changes different from the cobalt hydroxide starting material such as including a black color (for compound 1), a discoloration (for compound 2), and a brownish color (for compound 3). For this reason as well, the hardly-soluble cobalt compound of the claimed invention is different from any of the constituents to the active material of Uramoto et al.

Thus, Uramoto et al. does not disclose the hardly-soluble cobalt compound as recited in claim 26.

Moreover, there is no teaching or suggestion in Uramoto et al. to modify its active material to lead to the features of the present invention. Uramoto et al. does not mention anything as to a hardly-soluble cobalt compound or any advantages that would arise therefrom.

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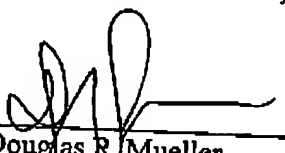
As noted above, the claimed invention provides the advantageous and unexpected results. As Uramoto et al. does not teach or suggest such features, the cited reference would not reasonably lead to the unexpected results enjoyed by the claimed invention. Thus, claim 26 is not anticipated by or obvious over Uramoto et al.

Applicants respectfully submit that claims 27-33 depend upon claim 26, and are allowable for at least the same reasons as claim 26. Applicants do not concede the correctness of the rejection, and reserve the right to present additional arguments with respect to any of claims 27-33 at a later date.

Favorable reconsideration and withdrawal of the rejection are respectfully requested.

In view of the above amendments and remarks, Applicants believe that the pending claims are allowable. Favorable reconsideration in the form of a Notice of Allowance is respectfully requested. Any questions regarding this communication can be directed to the undersigned attorney, Douglas P. Mueller, Reg. No. 30,300, at (612)455-3804.

Respectfully Submitted,



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